



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/986,068	11/07/2001	Kenji Takubo	011314	4716
38834	7590	12/14/2004	EXAMINER	
WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP			YE, LIN	
1250 CONNECTICUT AVENUE, NW			ART UNIT	
SUITE 700			PAPER NUMBER	
WASHINGTON, DC 20036			2615	

DATE MAILED: 12/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/986,068

Applicant(s)

TAKUBO, KENJI

Examiner

Lin Ye

Art Unit

2615

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 07 November 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 November 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Drawings***

1. Figure 2 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.121(d)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-2 and 4-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over the applicant's admitted Prior Art in view of Takahashi et al. Japan Publication 64-030261.

Referring to claim 1, the applicant's admitted Prior Art discloses in Figures 2-3, a solid state imaging device comprising: a plurality of two-dimensionally arrayed light receiving pixels which generate electrical charges according to the incident light (See page 1, lines 10-

17); at least two accumulating pixels (accumulating pixels 23a-d, see page 3, lines 14-15) for each of the light receiving pixels (8) for accumulating the electrical charges (see page 3, line 25 and page 4, lines 1-6); a light shield (6, see Figure 3 and page 5, line 1-5) for shutting off light entering the accumulating pixels and having an aperture at each of the light receiving pixels. However, the applicant's admitted Prior Art does not explicitly show an opaque cover having a low reflectivity and laid over the light shield with an aperture at each of the light receiving pixels.

The Takahashi ('261) reference teaches in Figure 1, a CCD chip (2) has an opaque cover (a low reflective face 2C) having a low reflectivity and laid over the light shield (light shielding section 2a) with an aperture at each of the light receiving pixels (2b) (See Abstract section of the Takahashi reference). The Takahashi ('261) reference is evidenced that one of ordinary skill in the art at the time to see more advantages for the solid state imaging device comprises a low reflective cover laid over the light shield layer, so that the generation of the Newton's rings due to the optical interference is prevented and a clear image can be obtained. For that reason, it would have been obvious one having ordinary skill in the art at the time of the invention was made to modify the solid state imaging device of the applicant's admitted Prior Art by providing an opaque cover having a low reflectivity and laid over the light shield with an aperture at each of the light receiving pixels as taught by Takahashi ('261).

Referring to claim 2, the applicant's admitted Prior Art and Takahashi ('261) reference disclose all subject matter as discussed in respected claim 1, and the Takahashi ('261) reference discloses the opaque layer (2C) further has a low transmissivity with respect to the incident light (a black Alumite material, See Abstract section of the Takahashi reference).

Referring to claim 4, the applicant's admitted Prior Art and Takahashi ('261) reference disclose all subject matter as discussed in respected claim 1, and the Takahashi ('261) reference discloses the opaque cover (2C) is extended over an edge of the aperture of the light shield (2a) as shown in Figure 1.

Referring to claim 5, the applicant's admitted Prior Art and Takahashi ('261) reference disclose all subject matter as discussed in respected claim 1, and the applicant's admitted Prior Art discloses wherein the solid state-imaging device is an FT-type CCD (See the applicant's specification, page 2, lines 15-16).

Referring to claim 6, the applicant's admitted Prior Art and Takahashi ('261) reference disclose all subject matter as discussed in respected claim 1, and the applicant's admitted Prior Art discloses wherein the solid state-imaging device is an IT-type CCD (See the applicant's specification, page 2, lines 15-16).

Referring to claim 7, the applicant's admitted Prior Art and Takahashi ('261) reference disclose all subject matter as discussed in respected claim 1, and the applicant's admitted Prior Art discloses wherein the solid state-imaging device is an FIT-type CCD (See the applicant's specification, page 2, lines 15-16).

Referring to claim 8, the applicant's admitted Prior Art and Takahashi ('261) reference disclose all subject matter as discussed in respected claim 5, and the Takahashi ('261) reference discloses wherein the opaque cover (2c) is made of the same material as that used in the black layer (a black Alumite treatment) for the filter array of a normal CCD (CCD chip 2 covered by a color mosaic filter array 3, see Abstract section of the Takahashi reference).

Referring to claim 9, the applicant's admitted Prior Art and Takahashi ('261) reference disclose all subject matter as discussed in respected claim 6, and the Takahashi ('261) reference discloses wherein the opaque cover (2c) is made of the same material as that used in the black layer (a black Alumite treatment) for the filter array of a normal CCD (CCD chip 2 covered by a color mosaic filter array 3, see Abstract section of the Takahashi reference).

Referring to claim 10, the applicant's admitted Prior Art and Takahashi ('261) reference disclose all subject matter as discussed in respected claim 7, and the Takahashi ('261) reference discloses wherein the opaque cover (2c) is made of the same material as that used in the black layer (a black Alumite treatment) for the filter array of a normal CCD (CCD chip 2 covered by a color mosaic filter array 3, see Abstract section of the Takahashi reference).

4. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over the applicant's admitted Prior Art in view of Takahashi et al. Japan Publication 64-030261 and Murakami Japan Publication 10-150179.

Referring to claim 3, the applicant's admitted Prior Art and Takahashi ('261) reference disclose all subject matter as discussed in respected claim 1; and the applicant's admitted Prior Art discloses a protective layer (7), see the applicant's specification, page 5, lines 4-5) laid over the light shield (6). When an opaque cover (a low reflective face 2C) of the Takahashi ('261) is provided in the applicant's admitted Prior Art, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to see when combining the teaching of Takahashi reference into the applicant's admitted Prior Art to place the protective layer laid between the light shield and the opaque cover (anti-reflection layer). This is further evidenced by the teaching of Murakami ('179) reference.

In particular, the Murakami ('179) reference teaches in Figure 1, a solid-state image-sensing device (CCD) comprises a protective layer (a covering film 19 with a transparency resin layer 22) is laid between the light shield (light-shielding film 18) and the anti-reflection layer (aluminum fluoride anti-reflection layer 26, see description of Murakami reference, [0020]-[0021]). The Murakami ('179) reference is evidenced that one of ordinary skill in the art at the time to see more advantages for the solid state imaging device comprising a protective layer laid between the light shield and anti-reflection layer, so that the CCD device is kept free from flares and ghosts effected by reflection of incident light and capable of dispensing with high hermetic sealing and protection (See Abstraction section of the Murakami reference). For that reason, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to place the protective layer laid between the light shield and the opaque cover (anti-reflection layer) disclosed by the applicant's admitted Prior Art.

### *Conclusion*

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.
  - a. Tanigawa JP. 03-227063 discloses a low reflective film 10 is provided in a solid-state image sensor.
  - b. Nakano et al. U.S. 6,147,390 discloses an intermediate-refractive-index film is disposed in the semiconductor substrate.

Art Unit: 2615

- c. Fukusho et al. U.S. 5,523,609 discloses a solid-state image-sensing device comprises a buffer layer to prevent damage to film of the light-shielding layer.
6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lin Ye whose telephone number is (703) 305-3250. The examiner can normally be reached on Mon-Fri 8:00AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew B Christensen can be reached on (703) 308-9644. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Lin Ye  
Examiner  
Art Unit 2615

December 10, 2004